HASP Monthly Status Report - February 2016

North Carolina Infrasound

February 26, 2016

Student Leader: Daniel C. Bowman (phone: 1-575-418-8555, email: daniel.bowman@unc.edu)
Faculty Advisors: Jonathan M. Lees (phone: 1-919-962-1562, email: jonathan.lees@unc.edu)

1 Synopsis

- We submitted our response to reviewer comments on our payload
- HASP undergraduate team is learning about acoustic array deployment and wave form analysis
- Design for the flight ladder instrumentation box is being finalized

2 Activity Summary

The past month, Kayla and Ethan have been primarily building their background knowledge of infrasound and the project. We have been reading parts of "Infrasound Monitoring for Atmospheric Studies" and some of the papers released from the teams previous HASP flights to gain conceptual knowledge. We have been learning some of the processes used to analyze data as well. This has been done by gaining experience converting data files, and by looking at the data collected from a previous HASP flight.

In addition, we have been familiarizing ourselves with the equipment that will be used to record the infrasound during the 2016 flight. Daniel showed us how all of the equipment worked, then showed us how to operate a station outside of Mitchell Hall on the campus of UNC. We then followed directions to take the station down and read the data into R using code developed by Daniel and Jonathan. This data set exposed us to interpreting what signals were present in a campus setting. After this, we took the equipment to a park by Raleigh-Durham International Airport. We set up the station, monitored the area for a little over two hours, then took down the station. The main goals of this experiment was to show we could operate the equipment with minimal assistance and find a traveling acoustic wave. We believe we found signals generated by airplanes and helicopters coming into and out of the airport. This process has increased our comfort with the equipment we will be responsible for setting up and taking down in both Palestine and Fort Sumner. We have also made progress in our discussion of an appropriate box to attach to the flight ladder. Taking into account advice given to us by engineers at NCSU and conversations we have had with Tim Ronan, we believe we have three viable possibilities for the box.

3 Issues Encountered

Weight and dimensions of the flight ladder box must be approved by CSBF before construction can begin.

4 Milestones Achieved

Successful deployments of infrasound arrays on the ground have helped the undergraduate student team build their knowledge and confidence in preparation for constructing the HASP array.

5 Team

The student team consists of Daniel C. Bowman, Kayla Seiffert, Ethan Dinwiddie, and Tim Ronan (University of North Carolina at Chapel Hill), Jacob F. Anderson (Boise State University) and Dennis Phillips (Michigan State University). Jonathan M. Lees (UNC Chapel Hill) serves as Faculty Advisor.